NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WETLAND CREATION

(Acre)

CODE 658

DEFINITION

A wetland created on a site location that historically was not a wetland, or is a wetland but the site will be converted to a wetland with a different hydrology, vegetation type, or function than naturally occurred on the site.

PURPOSE

To create wetlands that have wetland hydrology, hydrophytic plant communities, hydric soil conditions, and wetland functions and/or values.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to:

1. Sites where no natural wetland previously occurred, typically characterized by a nonhydric soil; or

2. Where a wetland exists but the wetland will be altered to a completely different wetland type as characterized by a change in hydrology, vegetation, or function and different from Wetland Enhancement (Code 659); or

3. Where a wetland previously existed and the wetland characteristics (hydrology, vegetation, and functions) will be different from what historically occurred rather than Wetland Restoration (code 657).

When the practice is completed, the site will meet the current NRCS criteria for a wetland as identified in the National Food Security Act Manual (latest amendment). If hydric soils do not exist at the site prior to creation, site conditions must be developed that provide a reasonable chance that hydric soil characteristics will develop over time.

This practice is applicable only if hydrologic conditions can be approximated by modifying drainage and/or artificial flooding of a duration and frequency to create and maintain wetland conditions during an average annual precipitation event.

This practice does not apply to a Constructed Wetland (code 656) intended to treat point and non-point sources of water pollution; Wetland Enhancement (code 659) intended to rehabilitate a degraded wetland where specific functions and/or values are enhanced beyond original conditions; or Wetland Restoration (code 657) intended to rehabilitate a degraded wetland where the soils, hydrology, vegetative community, and biological habitat are returned to original conditions.

CRITERIA

General Criteria

The landowner shall obtain necessary local, state, and federal permits that apply before the practice is applied.

Planned excavation will require an investigation of the site for buried utilities.

Water rights and water availability are assured prior to creation, if required.

Created wetlands will only be located where the soils, hydrology, and vegetation can be modified to meet the current NRCS criteria for wetland.

Nonhydric soils shall have the capacity to hold water (fine textured low permeability soils), have an impermeable layer at a shallow depth, or exhibit a seasonal high water table just below the topsoil.

Establish vegetative buffers on surrounding uplands to reduce sediment and soluble and sediment-attached substances carried by runoff.

Document the soil, hydrology and vegetative characteristics of the site and its contributing watershed before alteration.

All disturbed areas associated with structural measures or excavation shall be re-vegetated as soon as possible after the construction period in accordance with the Critical Area Planting standard (342).

Criteria for Hydric Soil Conditions

Establish an approximation of the soil microtopography and/or macrotopography typical for the wetland type(s) being created.

Criteria for Wetland Hydrology

The hydrology of the site is defined as the rate and timing of inflow and outflow, source, duration, frequency, and depth of flooding, ponding, or saturation.

The standards and specifications for Dike (356), Structure for Water Control (587), and Wetland Restoration (657) will be used as appropriate. Refer to the Engineering Field Handbook, Chapter 13, "Wetland Restoration, Enhancement, and Creation," and Chapter 6, "Structures," for additional design information.

Existing drainage systems will be utilized, removed, or modified as needed to achieve the intended purpose.

Criteria for Hydrophytic Vegetation

Establish hydrophytic vegetation typical for the wetland type(s) being established.

Preference shall be given to native wetland plants with localized genetic material. Plant materials collected or grown from material collected within a 200-mile radius from the site are considered local.

Plant species selected for planting shall be based on the soil type, planned hydrologic condition, and the adaptability of the species to those created conditions. Refer to Tennessee Biology Technical Note TN-6 or other references listed in this standard for the selection of woody species.

Where natural colonization of selected species will realistically dominate within five years, natural regeneration can be left to occur. For planned herbaceous plant community establishment, all hydric soils in the state have adequate seedbanks for colonization. For the planned afforestation of the site, natural regeneration of trees shall be allowed for light-seeded species when (1) the site is within 60 meters (197 feet) of mature hardwoods, or (2) the site is subject to periodic flooding with an upstream seed source for hydrochory.

Adequate substrate material and site preparation necessary for proper establishment of the selected herbaceous species shall be included in the design.

If the targeted hydrophytic vegetation is predominantly herbaceous, several species adapted to the site will be established. Herbaceous vegetation may be established by a variety of methods including mechanical or aerial seeding, topsoiling, organic mats, etc., over the entire site or a portion of the site and at appropriate densities and depths.

Afforestation by planting will include a minimum of three species, where appropriate. Seedling preparation and planting will follow the criteria of conservation practice code 612, Tree and Shrub Establishment. Site preparation for the establishment of trees and shrubs shall follow the Forest Site Preparation standard (code 490).

Afforestation by planting will be at the maximum rate of 302 tree seedlings per acre (12' x 12' spacing) and/or 680 shrub seedlings per acre (8' x 8' spacing), when wildlife habitat is a planned wetland function.

Livestock shall be excluded during a defined establishment period for the wetland plant community.

Criteria for Wetland Functions

A functional assessment (Hydrogeomorphic approach or similar method) shall be performed on the site prior to creation, when an existing wetland will be altered to another type of wetland. The Regional Guidebook for Applying the Hydrogeomorphic Approach to Assessing Wetland Functions of Low-Gradient Riverine Wetlands in West Tennessee will be the accepted functional assessment for creating riverine wetlands. The functional assessment methodology found in the National Food Security Act Manual shall be the accepted methodology for the creation of non-riverine wetlands. No functional assessment is required prior to the creation of a wetland on a nonhydric soil.

Created wetland goals and objectives should include targeted natural wetland functions for the wetland type and the site location, as determined by the functional assessment or reference wetland type being created.

A post-project assessment will be performed after an adequate period (generally one to two growing seasons after plant establishment) to assess the success of the creation effort. The assessment shall include as a minimum (1) an evaluation of the targeted hydrologic condition under normal climatic conditions and based on the engineering design, if applicable; (2) an adequate stand determination for planned plant communities; and (3) documentation of any damages resulting from off-site influences.

An adequate stand for planned afforestation shall be determined based on the minimum of (1) 60 percent stem survival of planted seedlings/cuttings per acre; or (2) 150 stems per acre of natural colonization of acceptable wetland species. An adequate stand for planned establishment of native herbaceous vegetation shall be a minimum 80 percent ground cover of acceptable wetland species.

CONSIDERATIONS

Consider effect of volumes and rates of runoff, infiltration, evaporation, and transpiration on the water budget.

Consider establishing dense stands of tall vegetation over a portion of the site for shading and to buffer wind. This effect can lower open water evaporation rates by as much as 20 percent, allowing for smaller drainage areas needed for recharge.

Consider the potential for a change in rates of plant growth and transpiration because of changes in the volume of available soil water.

Consider effects on downstream flows or aquifers that would affect other water uses or users.

Consider effects on wetlands or water-related resources and wildlife habitats that would be associated with the practice.

Considering positioning site(s) adjacent to existing wetlands to increase wetland system complexity and diversity, decrease habitat fragmentation, and ensure colonization of the site by wetland flora and fauna.

Consider linking wetlands by corridors wherever appropriate to enhance the wetland's use and colonization by the flora and fauna.

The nutrient and pesticide tolerance of the species planned should be considered, where known nutrient and pesticide contamination exists.

Consider effects on temperature of water resources to prevent undesired effects on aquatic and wildlife communities.

Embankments and excavated slopes should be located and shaped in a manner that is compatible with the existing landscape.

When constructing levees in floodplains, consider increasing both the front and back slopes in proportion to the anticipated flood stage. In high flood stage areas, slopes from 10:1 to as high as 20:1 will increase stability and lower maintenance. Damage to levees may be reduced when the entire levee is submerged uniformly and has flatter side slopes.

PLANS AND SPECIFICATIONS

Specifications for this practice shall be prepared for each site. Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other documentation. Requirements for the operation and maintenance of the practice shall be incorporated into site specifications.

OPERATION AND MAINTENANCE

The following actions shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation) and repair and upkeep of the practice (maintenance):

- Any use of fertilizers, mechanical treatments, prescribed burning, pesticides, and other chemicals shall not compromise the intended purpose. Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) shall be implemented where available and feasible.

- Timing and level setting of water control structures required for the establishment of desired hydrologic conditions or for management of vegetation.

- Inspection schedule for embankments and structures for damage assessment.

- Depth of sediment accumulation to be allowed before removal is required.

- Management needed to maintain vegetation, including control of unwanted vegetation.

- Haying and livestock grazing will be managed to protect and enhance established and emerging vegetation.

COMPLIMENTARY PRACTICES

Dike (356)
Structure for Water Control (587)
Wetland Restoration (657)
Fence (382)
Use Exclusion (472)
Critical Area Planting (342)
Tree/Shrub Establishment (612)
Forest Site Preparation (490)

GLOSSARY OF TERMS

Afforestation - The establishment of trees and shrubs by means of planting seed, seedlings, or cuttings.

Hydrochory - Seed dispersal by water.

Hydrogeomorphic Approach - Wetland classification system based on hydrology and landscape position.

Macrotopography - Significant variation in land relief resulting in alternating deeper water intermixed with some upland characteristics. Macrotopography is typically created with earth-moving equipment and results in greater than 6 inches up to 30 inches depth within created depressions.

Microtopography - Slight variation in land relief resulting in shallow depressions of less than 6 inches. Microtopography is typically created with on-farm tillage equipment.

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